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**Original Research Article**

# Formative research on infant mortality rate in Manipur

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## ABSTRACT

**Background:** IMR is universally regarded as the most important indicator of the health status of a community. Objectives was too triangulate low infant mortality data in Manipur using qualitative data in a district.
**Methods:** A formative research was conducted in Bishnupur area of Manipur in November-December 2017 among health care workers using in-depth interviews. A total of 15 in-depth interviews were transcribed and analysed with qualitative content analysis.
**Results:** Themes emerging out of analysis included well-equipped health care facilities, efficiency of health workers, parent's awareness, record maintenance, problems faced by the hilly areas and Government schemes.
**Conclusions:** All the participants are of the agreement that IMR in Manipur is low.

**Keywords:** Formative research, Healthcare workers, Infant mortality rate

## INTRODUCTION

Infant Mortality Rate (IMR) is the number of deaths per 1,000 live births of children under one year of age. IMR is universally regarded as the most important indicator of the health status of a community and the effectiveness of Maternal and Child Health services in particular. It is also an excellent indicator of the socio-economic development of a country.[1] This statistical index not only indicates the quantity and number of deaths, but is also indicative of life quality.[2] Infant mortality is the result of a complex web of determinants at different levels. Lancet neonatal survival series has shown that scaling up of peri-conceptional folic acid supplementation to reduce the incidence of neural tube defects, calcium supplementation to reduce eclampsia, detection and treatment of asymptomatic bacteriuria, community-based pneumonia management, and extra care for low birth weight infants, including Kangaroo mother care will lead to reduction in neonatal mortality.[3]

Among the developing countries, India alone contributes to one-third of the five million children who die before reaching their first birthday.[4] However, India has seen a decline in IMR over the years.

The IMR was reduced by 28% between 2015 and 2016 (National Family Health Survey-4 [NFHS-4]) as compared to 2005-2006 (NFHS-3), from 57/1000 to 41/1000 live births. The target fixed by the Government of India for IMR in 2019 is 28/1000 live births (National Health Policy, 2017).[5] However, the distribution of these gains is uneven across states. For example, at the national level, IMR varies from 38 in rural areas to 23 in urban areas.[6] To a large extent, India's underperforming states and its approach to reducing neonatal mortality will

determine its success or failure in reducing infant and child mortality in the future.[7] The success of Kerala state in reducing IMR has been attributed to its overall development characterised by (a) high female literacy, (b) higher status of women in the society, (c) good accessibility of health services even in rural areas, (d) equitable distribution of wealth resulting from land reforms. This is despite the lack of any industrial or agricultural development in the state.[8] According to the Sample Registration System (SRS) 2017: The national IMR is 34 deaths per 1000 births. Manipur reported one of the lowest IMR at 11 deaths per 1000 live births.

The key reasons behind the state's success in this regard, according to officials, are better medical facilities, proper and effective immunization, dedicated doctors and health workers, high health consciousness, a tremendous increase in institutional deliveries, women empowerment.

Swift reduction in IMR accompanies the progress of female literacy beyond the 65-70% range.[9] Literacy rate in Manipur has seen upward trend and is 76.94 percent as per 2011 population census. Of that, male literacy stands at 83.58 percent while female literacy is at 70.26 percent. Sometimes, physicians may feel compelled to underreport infant death statistics if they are pressured to reach statistical targets. In the case of Cuba, for example, Hirschfeld (2007b) and Hirschfeld (2007a) document such instances of underreporting.[10] Understated mortality statistics might lead to an improper allocation of funds.

This misallocation of funds, in turn, may result in less than necessary resources for infant and prenatal health care.[10] It is therefore imperative to analyse the statistics that are currently seen in Manipur through a finer lens with a wealth of information from different sources at different levels of healthcare. It is with this background in mind that the present study was carried out to confirm data triangulation of Infant Mortality Rate in Bishnupur district of Manipur.

## METHODS

A formative research was conducted in Bishnupur area of Manipur in November-December 2017. The study population included Medical Officers, Programme Officers, ANMs, ASHAs and Village leaders of Bishnupur area. Those who refuse to participate in the study were excluded. Purposive sampling strategy was used to recruit the participants. The sample size was not calculated but participants were recruited until a level of saturation was reached. In depth interview was conducted with the participants and only one question was asked to the participant i.e. “IMR in Manipur is very low. Do you agree?, If yes, why? If no, why?” A tape recorder was used during the interview.

Before the interview, the purpose of the study was explained and permission to tape record the whole conversation was taken. A quiet and isolated place was chosen for conducting the interview. Participants were explained about the purpose of the study. Feedbacks from the participants were solicited and the whole interview was tape recorded. All the interviews were transcribed and analysed with qualitative content analysis. Transcription was done using the recorded audio of the interviews.

Ten interviews conducted in Manipuri were translated and cross-checked by two members. Process of content analysis consisted of: selecting the unit of analysis (coding unit), grouping the codes into sub themes, developing a theme. In the first step, groups of words/statements that reflect the same central meaning were grouped as a coding unit. In the second step, all the codes were categorised into subthemes which refer to a group of content that share a commonality. All the categories were gathered together to develop a theme that showed the underlying meaning of the text. Ethical Approval was obtained from the Research Ethics Board, RIMS, Imphal. Informed verbal consent was taken from the participants before data collection. Data collected were kept secured under lock and key. Data collected were made accessible only to the investigators. Identifiers like name and address were not collected to maintain confidentiality.

## RESULTS

A total of 15 in-depth interviews were taken and the findings are presented in this section. The findings are organised into two sections.

**Table 1: Demographic details of the participants.**

| Designation | Gender | Age (in year) | Work experience (in year) |
|---|---|---|---|
| **Chief Medical Officer** | Female | 49 | 20 |
| **Programme Officer** | Male | 55 | 25 |
| **Programme Officer** | Male | 53 | 20 |
| **Medical Officer** | Male | 56 | 15 |
| **Medical Officer** | Female | 34 | 5 |
| **ANM** | Female | 42 | 15 |
| **ANM** | Female | 35 | 9 |
| **Staff Nurse** | Female | 33 | 2 |
| **Staff Nurse** | Female | 30 | 1 |
| **ASHA** | Female | 45 | 12 |
| **ASHA** | Female | 45 | 11 |
| **ASHA** | Female | 40 | 8 |
| **ASHA** | Female | 35 | 10 |
| **Councillor** | Male | 55 | 10 |
| **Councillor** | Male | 49 | 2 |

Demographic details of the participants (Table 1), themes with sub-themes (Table 2). Supporting statements of the participants (Table 3).

**Table 2: Themes and sub themes.**

| Themes | Sub-themes |
|---|---|
| **Well-equipped facilities** | Adequate experts<br>24 hours service<br>Better facilities |
| **Efficiency of health workers** | Mobilisation by ASHAs for immunisation<br>Adequate ANC and post-natal care<br>Hardworking staff |
| **Parents' awareness** | Benefits of institutional delivery<br>Improvement in health seeking behaviour |
| **Record maintenance** | No proper survey<br>No proper record keeping |
| **Problems faced by the hilly areas** | Inaccessibility<br>Lack of communication<br>Gap in the availability of facilities between hills and plain areas |
| **Govt. schemes** | Free medicines and investigations<br>Incentive based schemes like JSY and JSSK<br>Mission Indradhanush |
| **Other factors** | Vegetation of Manipur<br>Hard working Manipuris |

**Table 3: Responses of the participants.**

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| **Theme 1: Well-equipped facilities** |
| 4 out of the 5 doctors believe that the IMR can be attributed to the fact that Manipur has well equipped facilities. |
| "I very very much agreeing to your point nowadays that Infant Mortality Rate is very much reduced because of expert gynaecologists, obstetricians and the paediatricians." (55 yr/Male MO) |
| The same doctor further stated: |
| "Equipped hospitals nowadays and there is supply of ambulance also in every PHC. So, any emergency care can be referred to well-equipped hospitals like RIMS, JNIMS, private paediatric hospitals and all." |
| "Other reasons are also there. Health facilities to the rural area people. This communication is well established by ASHA" (53 yr/Male MO) |
| "Since last 5-6 years some of this thing PHC which are not under the 24*7 working days but nowadays most of the district PHC,CHC and the district hospitals are working 24*7." (56 yr/Male MO) |
| The MO further stated: |
| "There is 24 hours service for the ambulance which is a very much necessary for the PHC, referring from the PHC to the higher centres like the hospitals others like the JNIMS and the RIMS." |
| "If I am not wrong, the doctor patient ratio is quite high compared to other state." (49 yr Female Senior Medical Officer) |
| **Theme 2: Efficiency of health workers** |
| All the interviewees believed that it is through the efficient work by the health workers that has led to a significant reduction of the IMR. |
| "Nowadays, ASHAs are very very helpful, they used to give us, I mean, informations about pneumonia, I mean, diseases killing infants. They used to bring the infants in time and the ANMs are also very helpful nowadays, they are increasing their immunization work." (55 yr/Male MO) |
| "ASHAs are working at the grassroot levels in the village and they know what type of disease are suffering by the children and during pregnancy period time how to take care of the pregnant women." (53 yr/Male MO) |
| "Mainly depend on the sisters, doctors and the staff of the PHC and CHC and the district hospital and mainly is the depending on the immunization schedule and the work done by this thing, ANM, nurse and the doctor." (56 yr/Male MO) |
| The MO further stated: |
| "In this nutrition day, combinely nurse and the ANM, they survey the this thing how the babies are doing, how the mother's are doing and how the this thing devices are used for the birth gaping." |
| "I think one of the most important reasons as to why IMR is low is through the active participation of the ASHA as well |

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| as the ANMs who are posted everywhere in the state." (49 yr Female CMO) |
| This MO further cited mass media campaigns as a contributing factor. |
| "Because of the presence of ASHA like us, most of the pregnant women right from the beginning of pregnancy, we have done many things for them like entering their name in the card, registration, taking them to the ante natal check-up. We enquired whether their TT injection is given or not. If not, we give them TT injection." (35 yr ASHA) |
| The ASHA further stated: |
| "We continue our care even in the post-natal period up to 42 days after delivery, both the mother and child." |
| "We take preventive measures, take them for monthly check-ups to ascertain any health-related problem in consultation with the doctors." (40 yr ASHA) |
| She also added that: |
| "We take care of the pregnant women until the childbirth even up to post-natal period, so children dying rate is very low." |
| "With the introduction of ASHA, the ASHAs have clearly explained and parents who previously were ignorant have understood clearly." (30yr Staff Nurse) |
| "Before the introduction of ASHA, there were many maternal and child deaths which can be due to home delivery and many other reasons. But now, with the introduction of ASHA, both mother and infant deaths has declined." (45 yr ASHA) |
| The ASHA further elucidated her reasons: |
| "As soon as a woman is pregnant, she will be registered and until the whole 10 months of pregnancy, we take proper care of them. After the baby is delivered, we help them in fully immunising the child." |
| "Even those who are reluctant for institutional delivery, those ASHA will motivate them and bring them to the hospital for delivery for which they got some incentives." (35 yr ANM) |
| She further stated: |
| "Through the consultation with doctors and also based on the investigation reports like USG, preventive measures are taken up." |
| "If we lack in our supervision, they end up doing whatever they like. So, we advised them at what time should immunised their baby. Taking our advice, they do immunisation of their child at the right time." (45 yrs ASHA) |
| "I agree, IMR being low in Manipur is through our hard work right from the grassroot level. It is because of ANMs and ASHAs who are doing their work diligently and by adhering to the guidelines." (33 yr Staff Nurse) |
| "I agree that IMR is low in Manipur with the introduction of ASHAs. We ANMs give information to the ASHA regarding regular ANCs and regular immunisation. These are the reasons why IMR is low in Manipur." (42 yr ANM) |
| "In collaboration with Anganwadi and ASHA workers and with advices from the doctor, we give the right dosage of drugs. These are the reasons why mortality rate is reduced." (42 yr councillor) |
| He also said that since his area is under councillor, anganwadi worker has more role than ASHAs and they really motivate the women. |
| "I have not visited other ward, but in my ward, I do regular visit to Anganwadi school at least twice in a month. There I look after whether they give meal or not and how they give medicine to sick child." (55 yr councillor) |
| **Theme 3: Parents' awareness** |
| 4 out of the 5 doctors; 1 ASHA and 1 ANM cited the increase awareness of parents as another reason for low IMR in the state. |
| "In Manipur, public are very much aware about the benefits of institutional delivery." (49 yr Female CMO) |
| "Parents are very much motivated if the children has I mean, pneumonic syndromes, I mean signs and symptoms and the seriousness of the child, they used to meet ASHA, ANM and refer to well-equipped hospitals." (55 yr/Male MO) |
| "In the household also like everybody is taking care of themselves like all the medicine stuffs and all these. They are all aware of these, like I am pregnant, I have to give ANC check-up and its awareness is also very good."(34 yr/Female MO) |
| "People become very much aware of the medical facilities. They always go to the medical practitioner, either in the Govt hospital or private even if they know it is very serious, their child is suffering from any mild disease to moderate to severe disease. They always go to the medical practitioner even if it is very difficult to treat in Manipur, they go to Guwahati, Bangalore for treatment." (53 yr/Male MO) |
| "Regular ANC are done according to the choices of the pregnant women whether it may be a Govt hospital, private hospital or even the District hospital." (35 yr ASHA) |
| "The difference between the past and present is that the level of awareness at present is increasing. A lot has been done by the Govt to spread awareness among the public. All these things and also the parents have taken a big role in this matter." (30 yr ANM) |
| **Theme 4: Record maintenance** |
| 2 out of the 5 doctors believed that improperly maintained records might have some bearing on the IMR. |

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| "In our state we are not 100% institutional delivery so about home deliveries we don't have any record. And in fact, in our hospital also, some records are still missing. I don't think 100% record is maintained Govt hospitals records are maintained I think properly but for private hospitals some are always always kind of missing up." (34 yr/Female MO) |
| "For places in the hills we cannot take proper survey because one problem is that underground problem, due to communication problem, due to transport problems, we cannot reach the deep corner jungles places of the hills." (53 yr/Male MO) |
| **Theme 5: Problems faced by the hilly areas** |
| There is some difference in opinion regarding the problems faced by the hilly region of Manipur. Inaccessibility, communication problem and sparsely populated areas are some of the reasons cited. |
| "Government schemes have equally penetrated the state." (49 yr Female CMO) |
| "There is something disturbance in communication in hilly areas" (55 yr/Male MO) |
| "In the entire of the hill, villages of the hill, they don't have much facility of or to any other practitioners because they are very very remote and transportation and communication is very very dangerous." (53 yr Male MO) |
| "My colleagues from the hills also take care of them like as we do."(35 yr ASHA) |
| "As for hilly areas, there is no news as there is no hilly areas near my coverage. I can't say anything about that. And we have an ASHA day every month. On that day, we have shared this information and it seems to be little careless in the hilly areas but overall I thought that it is also fine for the hilly areas." (40 yr ASHA) |
| "In hilly areas, due to lack of accessibility and sparsely populated, there us some problem in health care delivery system. For example, JE vaccines after preparation needs to be used up within 2 hours. Many hill people don't get this vaccine due to lack of transportation which can deliver on time." (35 yr ANM) |
| Further: |
| "In hilly region, they have the traditional home delivery practice which I believe may cause more infant death." |
| "I believe that we have better facilities in the valley, so I think, we will do better than our colleagues from the hills. Hills ASHA might face more hardships than us." (45 yr ASHA) |
| When asked whether IMR being low in Manipur is true, this staff nurse said: "Yes, I agree but the workers from the hills may face more hardships than us." |
| "As far as hills is concerned, I think the title hills is for namesake only because all those working there are all meiteis. I think they will also do the same as we do because we have aspecific guidelines regarding ANC and immunisation schedule which all of us has to follow." (42 yr ANM) |
| "It depends on this thing terrain of the Manipur also like say Tamenglong, Chandel and Senapati and all, it is outward places very hard to reach places so in that places that is for the like say go for the immunization which can't which we can't understand, mobilise and this thing immunization vaccine schedule in the proper time in proper way, that's why there could be the chances of the rural and urban IMR difference." (56 yr/Male MO) |
| **Theme 6: Government Schemes** |
| 3 of the doctors, 2 of the ANMs and 2 of the ASHAs stated the availability of Government schemes as another important reason for low IMR in the state. |
| "The Indian Govt also has announced Indradhanush and expert obstetricians, gynaecologist, paediatricians, Infant Mortality Rate is very much reduced." (55 yr/Male MO) |
| "Distribution of the medicines by the Govt for example TT, IFA, Calcium etc have also benefitted a lot." (30 yr ANM) |
| "JSY is given the right time, iron tablet is given at the time of their check up." (40 yr ASHA) |
| "NRHM, they organised camps very frequently to the remote areas. Providing drugs also, Village Health Sanitation Committee provides special health care to the mother and child weekly in every village. They give iron tablets, calcium, they also advised what type of food diet they should take during pregnancy." (53 yr/Male MO) |
| "Nowadays, JSSK is introduced where free blood tests, free transportation, diet reimbursement is given in Bishnupur while monetary assistance is given in RIMS." (45yr ASHA) |
| She further stated: |
| "If a child under 1 year gets sick, we provide them free transportation." |
| "JSY, JSSK. Free ambulance service after ASHA informed our PHC, an ambulance is sent to pick the women in labour and delivery is done here. Free medicines as well as free meals are provided in the hospital." (35 yr ANM) |
| "Manipur being a small state, so, every Health Mission programme of the govt can penetrate every nook and corner of the state. The health Mission programme I refer to are JSY, JSSK,etc" ( 49 yr Female CMO) |
| This MO also cited the availability of free medicines at the hospitals as well as the recently introduced Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) as a contributing factor. She said: |
| "Through this, on the 9th of every month, experts in the field of Obs & Gynae come voluntarily to PHC to look into complicated pregnancy case. Every investigation provided are free like free USG, HIV test, etc. Family planning methods available are also provided at this time." |
| **Theme 7: Other factors** |

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| "Nature has favour Manipur that almost every grass or herbs here can be eaten. These plants are not eaten everywhere in other state. Yet, the plant contains high amount of iron. So, the chances of anaemia in pregnancy is very low. (49 yr Female CMO) |
| This doctor further elucidated: |
| "Also we Manipuris especially hilly women are very hard working. So, the chance of lifestyle disease is very less." |
| The following statements were made in regards to infant death: |
| "No mortality in my area till now, under my supervision" (49 yr councillor) |
| "From my personal experience, I have not seen any death of infant in the area under my coverage." (35 yr ANM) |
| "I have been working as an ASHA for the past 8-10 years. During this period I have not encountered any pregnant women as well as the babies dying." (35 yrs ASHA) |
| All the participants are of the agreement that IMR in Manipur is low: |
| "Yes, I agree that IMR is low in Manipur." (49 yr Female CMO) |
| "I am very very much agreeing to your point nowadays Infant Mortality Rate is very much reduced." (55 yr Male MO) |
| "See it's a..it's true but we are not 100% sure about it because like mostly I think 70-80% I think it's true only." (34 yr Female MO) |
| "I'm not 100% sure about hill areas but it is 100% sure it might be low in the plain area." (53 yr Male MO) |
| "I think so there could be the this thing gap of the urban and rural areas." (56 yr Male MO) |
| "Yes, I agree." (45 yr ASHA) |
| "I agree, in older times, pregnant women do not know that they should deliver in a hospital." (35 yr ANM) |
| "Yes, I agree." (45 yr ASHA) |
| "I agree, IMR being low in Manipur is through our hardwork, right from the grassroot level." (33 yr Staff Nurse) |
| "I agree that IMR is low in Manipur." (42 yr ANM) |
| "As of now, I agree." (35 yr ASHA) |
| "I agree." (40 yr ASHA) |
| "I myself do not know anything about this but on attending the meeting, we have been told that it is low, so we just believe it and I think so." (30 yr Staff Nurse) |
| "I agree that infant death in Manipur is low compared to other states." (55 yr Councillor) |
| "It is true that Manipur has low IMR compared to other states." (49 yrs Councillor) |

## DISCUSSION

This study gives an insight into the status of Infant Mortality Rate in Manipur through the eyes of the health care workers. According to World Health Organisation (WHO), improvement of hospital-based care can have an impact of up to 30% in reducing Infant Mortality Rate. Provision of round the clock availability of skilled medical care may reduce hospital based infant mortality.[11]

The doctors in this study are of the opinion that the health services in Manipur are well-equipped in terms of facilities as well as health professionals who are able to effectively cater to needs of the people in their village. There is also the availability of 24 hours service of the Primary Health Centres as well as the Community Health Centres.

Health care systems with a strong primary care orientation are more likely to provide better population health and more equitable outcomes.[12] This can be achieved when the workers work effectively for the health of the public. All the interviewees believed that it is through the efficient work by the health workers that has led to a significant reduction of the IMR. The work of the Accredited Social Health Activist (ASHA) has been praised by ANMs, nurses and doctors alike through their active participation in ante natal check-ups of the pregnant women, advocating institutional deliveries, and immunisation. Education is considered as an important social determinant of health and there is abundant evidence of the positive relationship between education and health status of the people.[13] Kerala's literacy rate is 93.91% and its IMR is only 10 per 1000 live births. Providing education to the parents, particularly to mothers is critical to reduce infant mortality rates and its regional variations in India.[13]

The interviewees believed that the awareness among the parents in Manipur is also a contributing factor in the low IMR in the state. According to them, the parents are acquainted with the benefits of regular ante natal check-ups, timely immunisation, institutional deliveries, etc. They also have good health seeking behaviour.

Underreporting of deaths remain an issue across the globe.[14] It hampers the accurate estimation of the numbers of infant deaths. A study conducted in Haryana discovered that many of the frontline field workers involved in the review system appear to have very heavy workloads and little time for the detailed documentation of deaths. This problem may have been exacerbated by a lack of awareness about the importance of accurate

reporting and inconsistencies in community access to local health-care services.[15]

Only 2 of the health care workers in our study believed that records might not be properly maintained. They also highlighted that there might be some difference in the reporting of infant deaths from the private sector. Whether this statement is true remains to be seen and need further evaluation to come to a decisive conclusion.

It has been shown that there exists a degree of imbalance in the distribution of development entitlements between the hill and valley districts whereby the more inaccessible hill districts in which several of the tribes live are deprived in terms of the non-implementation of various developmental programmes.[16] There is the belief that the terrain of the hilly areas makes its accessibility difficult for the health care workers especially in terms of immunisation. There is the problem of transportation and communication as well. The traditional home delivery is still prevalent according to some of the interviewees and the facilities are not as well developed as compared to other parts of Manipur.

The Government of India has introduced many schemes in relation to maternal and child health. These programmes like Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), Integrated Management of Childhood Illnesses (IMNCI) and Mission Indradhanush have been functional in Manipur and the health care workers believed that these schemes have led to the reduction of IMR in the state. The provision of monetary incentives as well as free health care for the pregnant women and their children has also been instrumental.

## CONCLUSION

From the perspective of the health care workers, they are in agreement with the low IMR statistics in Manipur. The most common reason they stated was because of the efficiency of the health workers. There is a belief that there is a disparity between the hilly and plain areas. Further studies need to be conducted in different parts of Manipur to gain insight in the different districts especially the hilly areas.

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